ASSESSMENT OF ADHERENCE TO CLINICAL PROTOCOLS ON SAFE CHILDBIRTH PRACTICES AMONG SKILLED BIRTH ATTENDANTS IN SELECTED PUBLIC HEALTHCARE FACILITIES, CHENNAI

SYNOPSIS

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CHAPTER 1- INTRODUCTION

India accounts for the maximum number of maternal deaths in the world, nearly 32,000 pregnant women each year, still lose their lives during pregnancy, childbirth and the postnatal period each year. The current MMR of India is 113 and in Tamil Nadu MMR is 60 **(SRS-2018).** In addition, 5, 90,000 newborns die each year in the first month of life. The neonatal mortality rate (NMR) in India is 23 per 1000 live births whereas the early neonatal mortality rate is 18 per 1000 live births, in Tamil Nadu NMR is 11 per 1000 live births, and early neonatal mortality rate is 7 per 1000 live births **(SRS-2018)** which is a serious cause of concern. The majority of maternal and perinatal deaths are clustered around the time of birth, with the highest number of deaths occurring within the first 24 hours after childbirth, almost 46% of maternal deaths and 40% of stillbirths and neonatal deaths. About 33% of maternal deaths in India are between the age group of 20-24 years **(SRS 2018).**

Various types of skill based trainings are being implemented by the Tamil Nadu with NRHM support, but ensuring practice of standard technical protocols impacting quality of services still remains a challenge. Despite the various types of trainings, it is observed that the healthcare professionals are less confident in applying skills. Limited focus on assessing the competencies acquired by the trainees during the training, inadequate exposure / opportunity to practice them during training, lack of post training follow up and underutilization of trained manpower at functional healthcare facilities, have resulted in compromise of skill acquisition, practices and sustenance. This suggests the need for improving quality of care during intrapartum period in public healthcare facilities.

Surya Bali1 and Venkatashiva Reddy (2021) describes that significant variations was observed in knowledge and skill competency scores of SBAs between different evaluation components and different cadres. The study found that appropriate training had not resulted in an acceptable level of knowledge and skill demonstrated in a practical situation. There is a

critical need to improve the training system of skill birth attendant, to provide technically competent birth attendants rather than merely qualified.

One of the major contributors towards maternal deaths is poor quality of intrapartum care. The WHO Safe Childbirth Checklist (SCC) incorporates major causes of maternal death, intrapartum stillbirth, and early neonatal death and expected to have an impact on maternal and perinatal morbidity and mortality. The use of the SCC and provider performance of best practices increased in intervention facilities reflecting improvement in quality of facility childbirth care for women and newborn in low resource settings **(Somesh kumar.et.al., 2016).**

Improving the maternal and child health and their survival are central to the achievement of national health goals under the National Health Mission (NHM). SDG Goal 3 also includes the focus on reducing maternal, newborn and child mortality. A transformational change in the processes related to the care during the delivery, which essentially relates to intrapartum and immediate postpartum care, is required to achieve tangible results within short period of time. Prerequisite of such approach would also hinge upon the health system's preparedness for prompt identification and management of maternal and newborn complications. Delivery of such transformed care would not only need availability of adequate infrastructure, functional & calibrated equipment, drugs & supplies & HR, but also meticulous adherence to clinical protocols by the service providers at the healthcare facilities.

The services of skilled birth attendants are to be fastidiously rendered, but it is perceived that their lack of knowledge and competence is endangering the lives of women and the newborn. This study finding has determined the significant knowledge and practice gaps, their causes and impact in the outcome of healthcare services rendered in terms of service provision, infrastructure, supplies, conduction of delivery, infection control practices, management of complications, respectful maternity care and documentation practice. The study was highlighting to bring about a new action plans and policies at the government level in relation to skill based focused training, supportive supervision, mentoring and evaluation system.

CHAPTER 2- AIMS AND OBJECTIVES

Chapter 2 briefs about the main aims and objectives of the study. The aim of the present study is to assess the skilled birth attendant's adherence to clinical protocols on safe childbirth practices at selected public healthcare facilities, Chennai

2.1: TITLE OF THE STUDY

Assessment of adherence to clinical protocols on safe childbirth practices among skilled birth attendants in selected public healthcare facilities, Chennai.

2.2: OBJECTIVES OF THE STUDY

1. To assess the functionality of labour room of public healthcare facilities
2. To determine the knowledge, practice, attitude, barriers and labour outcomes on safe childbirth practices among skilled birth attendants
3. To compare the knowledge, practice, attitude, barriers and labour outcomes on safe childbirth practices between MCH hospitals and UCHCs
4. To identify the relationship among the knowledge, practice, attitude, barriers and labour outcomes on safe childbirth practices
5. To associate the knowledge, practice, attitude, barriers and labour outcomes with their selected demographic variables
6. To develop app based self-learning module on safe childbirth practices for skilled birth attendants

2.3: OPERATIONAL DEFINITIONS

Assessment: It refers to observation of functionality of the public healthcare facilities, SBA's childbirth practices and labour outcomes.

Adherence: The extent of skilled birth attendant's knowledge, practice and attitude compliance to clinical protocols on safe childbirth practices and the barriers preventing SBA's for practicing safe childbirth.

Clinical Protocols: The Government of India Guidelines on safe childbirth practices for skilled birth attendants working in public healthcare facilities.

Safe Childbirth Practices: The sequence of activities to be followed by skilled birth attendants from admission of women in labour room in active phase of labour till the end of fourth stage of labour.

Skilled birth attendants: A nurse or maternity assistant who provides/assists basic and emergency healthcare services (Neonatal resuscitation and management of postpartum hemorrhage) to women and newborns in labour room.

Public Health Facilities: It refers to the Government functional delivery points such as MCH hospitals and Urban Community Health Centers (UCHCs).

2.4: ASSUMPTIONS

- Quality is a more significant predictor for utilization of maternal health care
- Adherence to safe childbirth practices prevents maternal and neonatal mortality and morbidity in public healthcare facilities
- Skilled birth attendants may have adequate knowledge on safe childbirth practices
- Skilled birth attendants may have low adherence to clinical protocol on safe child birth practices
- Skilled birth attendants might have positive attitude towards safe childbirth practices
- The public healthcare facilities functionality might affect safe childbirth practices in the labour room
- The labour outcome may be good in MCH hospitals

2.5: DELIMITATIONS: The study was delimited only to the skilled birth attendants working in labour room of Government MCH hospitals and UCHCs settings.

2.6: CONCEPTUAL FRAMEWORK: The researcher developed the conceptual framework based on Pender's Health Promotion Model (1996).

CHAPTER 3- REVIEW OF LITERATURE

The review of literature comprises of the following headings:

- Research studies related to maternal and neonatal mortality and morbidity
- Research studies related to functioning of public health facilities
- Research studies related to knowledge, practice and attitude of SBAs on safe childbirth practices
- Research studies related to maternal and neonatal outcome on safe childbirth practices
- Research studies related to barriers in practicing safe childbirth practices

3.1: Summary of Review of Literature: A total of 110 national and international research articles were reviewed and included for the study which encompassed systematic review and meta-analysis reports. The extensive review of literature was conducted under the topic of maternal and neonatal mortality and morbidity, knowledge, practice and attitude of SBAs on safe childbirth practices, functionality assessment and barriers in practicing safe childbirth practices. Studies reported that gaps are identified in knowledge and practices of skilled birth attendants which are to be traversed using innovative strategies to reduce the complications during labour.

3.2: Gaps in the literature: Studies were mainly concentrated only on maternal and neonatal mortality and morbidity. Studies related to functionality of labour room assessment was found very minimal. The attitude of skilled birth attendants was not published in the national level. There was a lack of similar studies and this study is the first of its kind assessing exclusively the SBA's (Nurses) knowledge, practice and attitude on all the aspects of safe childbirth practices from active phase of labour to fourth stage of labour at the state level in India.

3.3: What the present study adds to the existing literature: The study would add the statistics of demographic variables of Indian context. The study would also add the existing childbirth practices of SBAs and stresses the use of safe childbirth checklist for each labour to prevent maternal and neonatal mortality and morbidity.

CHAPTER 4- METHODOLGY

4.1: RESEARCH APPROACH: Quantitative Descriptive Approach

4.2: RESEARCH DESIGN: Descriptive Observational Research Design

4.3: VARIABLES OF THE STUDY:

Research variables: Functionality of labour room, knowledge, practice, attitude and labour outcome of SBA's on safe childbirth practices, and barriers for SBA's in practicing safe childbirth

Extraneous variables: The extraneous variables in this study are working facility, working area, age, religion, marital status, income, qualification, designation, employment status, total years of experience, experience in labour room, training programs attended related to childbirth practices, number of trainings, type of training and year of last training attended

4.4: SETTINGS OF THE STUDY: The study was conducted in three Government Maternity and Child health (MCH) hospitals and six Urban Community Health Center (UCHCs). The three MCH hospitals were I O G Government Hospital for Women and Children, Government Kasturba Gandhi Hospital for Women and Children and Government Raja Sir Ramaswamy Mudaliar (RSRM) Lying-in Hospital. The six UCHCs were Perumalpet UCHC, Pulianthope UCHC, Shenoy nagar UCHC, Vadapalani UCHC, Saidapet UCHC and Adyar UCHC. The MCH hospitals and UCHCs are equipped in providing services to woman and newborn in casualty, AN ward, Labour room, Septic labour room, Newborn care corner, PN ward, NICU, MICU and Operation theatre. Approximately 800 - 1400 deliveries/month are conducted in MCH hospitals, whereas in UCHCs less than 100 deliveries are conducted per month.

4.5: POPULATION: The population comprised of all skilled birth attendants in labour room of selected public health facilities (MCH hospitals and UCHCs)

4.6: SAMPLE SIZE: The sample size was calculated using power analysis. Sample size is 160 (From MCH hospitals-80 samples + UCHCs-80 samples)

4.7: CRITERIA FOR SAMPLE SELECTION:

Inclusion Criteria

- All the SBAs available in the labour room, septic labour room and NBC
- SBA's who were providing services to woman from admission of women in labour room in active phase of labour till the end of fourth stage of labour
- SBAs who were conducting full term normal vaginal delivery
- SBAs who were conducting delivery for woman with high risk maternal conditions such as anemia, PIH, mild to moderate pre-eclampsia, GDM (Blood sugar level between 120-140 mg/dl), Hypothyroidism and Rh-ve
- SBAs who were conducting delivery for woman with PROM, HBSAg positive and HIV positive
- SBAs who were managing complications such as PPH and Birth asphyxia

Exclusion Criteria

- SBAs who were conducting delivery in MICU
- SBAs who were conducting delivery for eclamptic woman
- SBAs who were referring woman or baby to other public health facilities before fourth stage of labour
- SBAs who were delivering babies less than 2.0 kg of birth weight
- Labour room in-charges and relievers from other maternity wing
- SBAs who were not willing to participate in the study

4.8: SAMPLING TECHNIQUE: Convenient sampling technique

4.9: DEVELOPMENT AND DESCRIPTION OF THE TOOLS

The research instruments was prepared by the investigator after an extensive review of literature and with expert's guidance. The tools used for the present study consisted of the following:

Section 1: Demographic variables of skilled birth attendants, demographic, obstetric and clinical variables of women admitted for vaginal delivery in labour room

i) Demographic variables of skilled birth attendants included in the study were age, religion, marital status, income, working area, qualification, designation, employment status, total years of experience, experience in labour room, training programs attended related to childbirth practices, number of trainings, type of training and year of last training attended

ii) Demographic, obstetric and clinical variables of women admitted for vaginal delivery in labour room were age, gestational age, gravida, para, antenatal registration, number of antenatal visits, high risk maternal conditions, blood pressure, hemoglobin level, blood sugar level, blood group and urine analysis for protein

Section 2: It is a modified NQAS check list for public health facilities to assess the functionality of the labour room. The functionality of labour room assessment checklist consisted of 110 items, to assess the availability in terms of physical infrastructure, manpower, equipment, instruments, drugs, consumables and records. The items were scored as full compliance, partial compliance and non-compliance.

Section 3: The adherence to safe childbirth practices among the skilled birth attendants was assessed using the following tools:

Part A: Structured knowledge questionnaire was used to assess the knowledge of skilled birth attendants on safe childbirth practices. The questionnaire consisted of 30 questions, comprised of questions related to active phase of labour, conduction of labour, immediate care of newborn, active management of third stage of labour, fourth stage of labour, management of high risk maternal conditions during labour, management of complications (PPH and birth asphyxia) and infection control practices.

Part B: The SBA's adherence to clinical protocols on safe childbirth practices was assessed using the modified WHO safe childbirth checklist. It consisted of 150 items. The checklist comprised of items related to admission to labour room, active phase of labour, second stage of labour, active management of third stage of labour, fourth stage of labour, medications, infection control practices, respectful maternity care, documentation practices and management of complications.

Part C: The assessment of SBA's attitude on safe childbirth practices was carried out using 3 point Likert scale. The scale had 20 items with both positive and negative statements. The items were scored as agree, uncertain and disagree. The total score for the attitude was 40.

Part D: The assessment tool used to identify the barriers in practicing safe childbirth practices consisted of 20 items. The items were scored as never, sometimes and always. It comprised of items related to healthcare facility infrastructure, logistics and equipment, human resources management and capacity building. The total score was 40.

Section 3: The labour outcome assessment checklist had two outcomes namely maternal outcome and neonatal outcome which consisted of 13 items. The maternal outcome included perineal tear, cervical tear, retained placenta, incomplete placental delivery, postpartum hemorrhage, unstable vital signs and maternal death. The fetal outcome included baby did not cry immediately after birth, birth asphyxia, abnormal APGAR, admission to NICU, unstable vital signs and neonatal death.

Score Interpretation

Research Tool	**Score Interpretation**		
	< 50 %	**50-75%**	**>75%**
Modified NQAS check list for public health facilities	Low compliance	Moderate compliance	High compliance
Structured knowledge questionnaire	Inadequate knowledge	Moderately Adequate knowledge	Adequate knowledge
Modified WHO safe childbirth checklist	Low adherence	Moderate adherence	High adherence
Attitude assessment using 3 point Likert scale	Unfavorable attitude	Moderately favorable attitude	Favorable attitude
Labour outcome assessment check list	Poor outcome	Moderate outcome	Good outcome

4.10: CONTENT VALIDITY

Content validity was obtained from 7 nursing experts in the field of Obstetrics & Gynecology nursing and nursing research and 4 Obstetricians. The expert suggestions were incorporated and approval of the refined tool was finalized with guidance from the Research guide, Statistician and Advisory committee members.

4.11: RELIABILITY OF THE TOOL

To test reliability, the tool was administered to 30 samples from Government KMC hospital Chennai and UCHC.

Research Variable	Tool	Reliability method	'r' value
Functionality of Labour room	Modified NQAS checklist for public healthcare facilities	Inter rater	0.86
Knowledge	Structured Knowledge Questionnaire	Test retest	0.85
Practice	WHO Modified safe childbirth checklist	Inter rater	0.87
Attitude	Attitude assessment using 3 point Likert scale	Split half method	0.88
Barrier	Barrier assessment tool	Test retest	0.91
Labour outcome	Labour outcome assessment check list	Inter rater	0.84

4.12: ETHICAL CONSIDERATIONS

Formal written permission was obtained from the hospital authorities. The purpose of the study was explained to the participants and informed consent both oral and written was obtained from the samples and confidentiality was maintained.

4.13: PILOT STUDY

The pilot was conducted in labour room of Government KMC hospital and UCHC with the sample size of 30. The results of the pilot study are as follows;

- The functionality of labour room with regard to manpower, drugs and consumables was in high compliance, while physical infrastructure, equipment and instrument and records was in moderate compliance.
- The majority of skilled birth attendants had inadequate knowledge (61.2%) on safe childbirth practices
- The majority of the SBA's had low adherence (54.6%) to clinical protocols on safe childbirth practices with moderately favorable attitude

- The barrier mean score for practicing safe childbirth practices among SBAs was found to be average.
- There was a significant correlation between knowledge, practice, attitude, barriers and labour outcomes at $p< 0.01$ and $p< 0.5$ level.
- There was a significant association between knowledge, practice, attitude, barriers and labour outcomes with their selected demographic variables at $p<0.001$, $p< 0.01$ and $p< 0.5$ level respectively.

Pilot study report revealed that the tool was reliable and feasible and the proposed analytical measures were suitable for the study

4.14: DATA COLLECTION PROCEDURE

The data collection procedure was done in different phases as mentioned below;

Phase 1: Assessed the existing functionality of labour room of MCH hospitals & UCHCs by observation using modified NQAS check list for public health facilities.

Phase 2: Assessed the level of adherence to clinical protocols on safe childbirth practices among skilled birth attendants by non-participant observation method from admission of women for childbirth in active phase of labour till the end of the fourth stage of labour using the modified WHO safe childbirth checklist. The labour outcome was also measured during this phase of data collection

Phase 3: In this phase, the existing knowledge of skilled birth attendants on safe child birth practices was assessed using structured knowledge questionnaire

Phase 4: The skilled birth attendant's attitude on safe childbirth practices was carried out using 3 point Likert scale

Phase 5: The barriers for practicing safe childbirth practices was carried out using structured assessment tool

P**hase 6:** App based learning module on safe childbirth practices was developed based on the gaps identified and will be provided to the all the skilled birth attendants participated in the study. The self-learning module and leaning activity will be available in both Tamil and English language.

CHAPTER 5- DATA ANALYSIS AND INTERPRETATION

ORGANIZATION OF DATA

The data obtained from 160 samples were analyzed and presented in this chapter under the following headings:

Section 5.1: Description of background variables of skilled birth attendants and women admitted for normal vaginal delivery in labour room

Section 5.2: Assessment of functionality of labour room in public healthcare facilities

Section 5.3: Assessment of the knowledge, practice, attitude, barriers and labour outcomes on safe childbirth practices among skilled birth attendants

Section 5.4: Comparison of knowledge, practice, attitude, barriers and labour outcomes on safe childbirth practices among skilled birth attendants in MCH hospitals and UCHCs

Section 5.5: Correlation of knowledge with practice, attitude, barriers and labour outcome on safe childbirth practices among skilled birth attendants

Section 5.6: Association of selected demographic variables with knowledge, practice, attitude, barriers and labour outcomes on safe childbirth practices among skilled birth attendants

Section 5.1: Description of background variables of skilled birth attendants and women admitted for normal vaginal delivery in labour room

Table 5.1.1: Frequency and percentage distribution of demographic variables of skilled birth attendants working in MCH hospitals and UCHCs N=160

Demographic variables		MCH Hospitals (N=80)		UCHCs (N=80)		Total (N=160)	
		n	%	n	%	n	%
Age group	21-30 years	22	27.5	32	40.0	54	33.8
	31-40 years	48	60.0	12	15.0	60	37.5
	41-50 years	10	12.5	23	28.8	33	20.6
	Above 50 years	-	-	13	16.2	13	8.1
Religion	Hindu	54	67.5	62	77.5	116	72.5

	Christian	25	31.2	18	22.5	43	26.9
	Muslim	1	1.3	-	-	1	0.6
Marital Status	Single	3	3.8	23	28.8	26	16.2
	Married	77	96.2	57	71.2	134	83.8
Income	Less than INR 15000	3	3.8	35	43.8	38	23.8
	INR 15000-30000	5	6.2	-	-	5	3.1
	INR 31000-45000	5	6.2	2	2.5	7	4.3
	INR 46000-60000	58	72.5	9	11.2	67	41.9
	Above INR 61000	9	11.3	34	42.5	43	26.9
Qualification	ANM	-	-	16	20.0	16	10.0
	MPHW	-	-	20	25.0	20	12.5
	GNM	62	77.5	29	36.2	91	56.9
	PCBSN	1	1.3	1	1.3	2	1.3
	BSN	12	15.0	14	17.5	26	16.2
	MSN	5	6.2	-	-	5	3.1
Working area	Labour Room	51	63.8	55	68.8	106	66.3
	Septic Labour Room	29	36.2	-	-	29	18.1
	Newborn Care Corner	-	-	25	31.2	25	15.6
Designation	Staff Nurse	80	100	45	56.2	125	78.1
	Maternity Assistant	-	-	35	43.8	35	21.9
Employment	Permanent	72	90.0	45	56.2	117	73.1
	Contract	8	10.0	35	43.8	43	26.9
Total years of experience	Less than 1 year	1	1.3	9	11.3	10	6.3
	1-10 years	43	53.8	29	36.2	72	45.0
	11-20 years	31	38.7	10	12.5	41	25.6
	21-30 years	5	6.2	32	40.0	37	23.1
Experience in labour Room	Less than 1 year	6	7.5	12	15.0	18	11.2
	1-5 years	43	53.8	24	30.0	67	41.9
	6-10 years	26	32.5	17	21.2	43	26.9
	11-15 years	5	6.2	3	3.8	8	5.0
	16-20 years	-	-	9	11.2	9	5.6
	21-25 years	-	-	1	1.3	1	0.6
	26-30 years	-	-	14	17.5	14	8.8
Training programs attended related to childbirth practices	No	26	32.5	43	53.8	69	43.1
	Yes	54	67.5	37	46.2	91	56.9
Number of Training attended	0 (No Training)	26	32.5	43	53.8	69	43.1
	1-2 times	47	58.8	34	42.4	81	50.6
	3-4 times	5	6.2	3	3.8	8	5.0

	5-6 times	2	2.5	-	-	2	1.3
Type of Trainings attended	No Training attended	26	32.5	43	53.8	69	43.1
	RCH	1	1.3	3	3.8	4	2.5
	SBA	46	57.5	34	42.5	80	50.0
	MCH	3	3.8	-	-	3	1.9
	AMTSL	17	21.3	8	10.0	25	15.6
	NR	5	6.3	11	13.8	16	10.0
	BMWM	4	4.9	1	1.3	5	3.1
Year of last training attended	0 (No Training)	26	32.5	43	53.8	69	43.1
	1-4 years	14	17.5	24	30.0	38	23.8
	5-8 years	21	26.2	8	10.0	29	18.1
	9-12 years	18	22.5	4	4.9	22	13.7
	13-16 years	1	1.3	1	1.3	2	1.3

The data presented in table 5.1.1 reveals that majority of the skilled birth attendants in MCH hospitals were between the age group of 31-40 years, whereas in UCHCs between the age group of 21- 30 years. Most of the SBA's in both the settings belonged to Hindu religion and were married. It was also noted that largest segment of SBA's were drawing income between INR 46000-60000, while in UCHCs less than INR 15000 and above INR 61000.

The maximum number of SBA's were qualified with GNM, designated as staff nurse and working in labour room with permanent employment. The total nursing experience of SBA's in MCH hospitals were 1-10 years, however in UCHCs were 21-30 years, in both the settings the highest number of SBA's have 1-5 years of labour room experience only.

It was also further noted that only 67.5% and 53.8% of SBAs have attended training programs related to childbirth practices in MCH hospitals and UCHCs respectively. The largest segment of SBA's had attended training 1-2 times only, most of them attended only SBA training, that too 5-8 years back in MCH hospitals and 1-4 years back in UCHCs.

Table 5.1.2: Frequency and percentage distribution of demographic, obstetric and clinical variables of women admitted in labour room N=405

Demographic, Obstetric and Clinical variables		n	%
A. Demographic variable			
Age in years	<20 years	20	4.9
	20-25 years	225	55.6
	26-30 years	124	30.6
	31-35 years	32	7.9
	>35 years	4	1.0
B. Obstetric variables			
Gestational age	37-40 weeks	393	97.0
	41-42 weeks	12	3.0
Gravida	1-2	342	84.4
	3-4	61	15.1
	>4	2	0.5
Para	0	217	53.6
	1-2	186	45.9
	3-4	2	0.5
Antenatal care registration	<12 weeks	395	97.5
	>12 weeks	10	2.5
Number of Antenatal visits	Less than 4	13	3.2
	More than 4	392	96.8
High risk maternal conditions	Anemia	204	50.4
	Pregnancy Induced Hypertension	33	8.1
	Pre-eclampsia	7	1.7
	Gestational Diabetes Mellitus	30	7.4
	Hypothyroidism	24	5.9
	HBSAg Positive	14	3.5
	HIV positive	9	2.2
	Premature Rupture of Membranes	80	19.8
	Rh Negative	9	2.2
C. Clinical variables			
Blood pressure	<140/90 mm hg	365	90.1
	≥140/90 mm hg	40	9.9
Hemoglobin level	<4 g/dl	-	-
	4-6.9 g/dl	1	0.2
	7-9.9 g/dl	71	17.6
	10-10.9 g/dl	132	32.6
	≥11	201	49.6
Blood sugar	70-119 mg/dl	375	92.6
	120-140 mg/dl	30	7.4
	141-160 mg/dl	-	-
Blood group	A+ve	137	33.8

	B+ve	157	38.8
	AB+ve	16	4.0
	O+ve	86	21.2
	A-ve	5	1.2
	B-ve	4	1.0
Urine analysis for protein	Absence	398	98.3
	Presence	7	1.7

The facts in the table 5.1.2 depicts that majority of women admitted in labour room for normal vaginal delivery were in the age group of 20-25 years, with gestational age of 37-40 weeks with primigravida, had done antenatal registration less than 12 weeks and had more than 4 AN visits. It was also noted that a proportion of women had high risk maternal conditions. The clinical variables of women showed that greatest number of women's blood group was B+ve and had normal blood pressure, normal hemoglobin level and normal blood sugar level and absence of protein in urine.

Section 5.2: Assessment of functionality of labour room in MCH hospitals and UCHCs

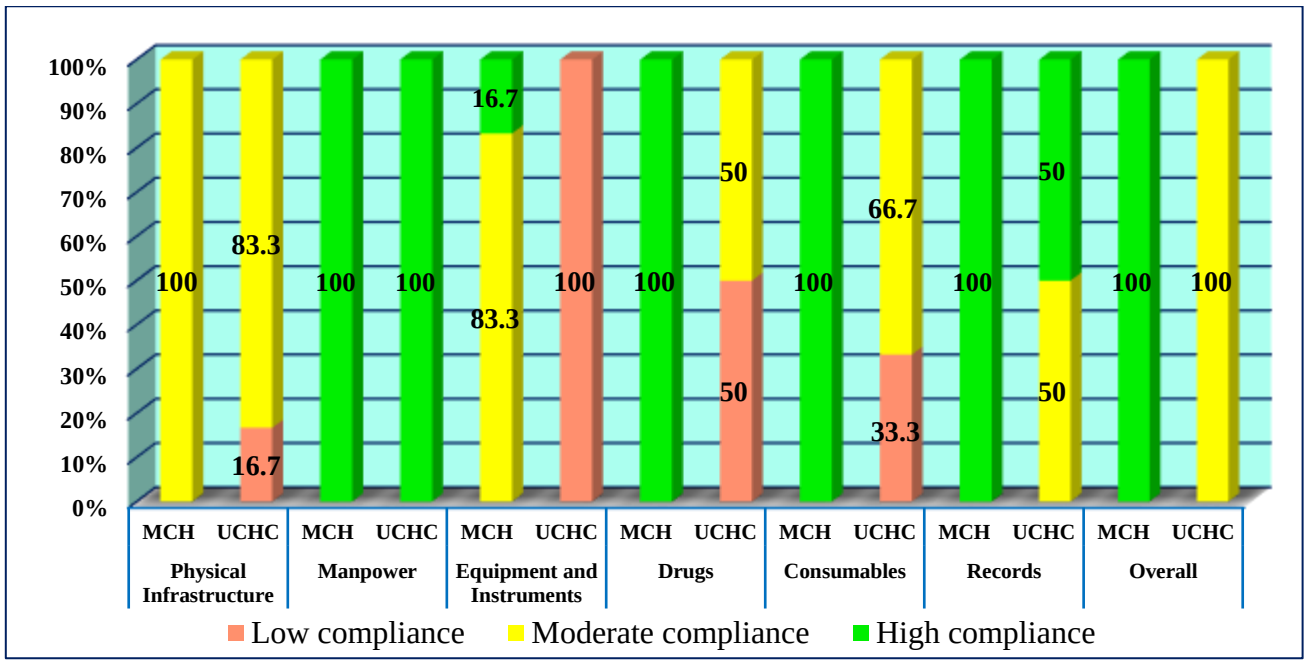


Fig 5.2: Percentage distribution of functionality of labour room in MCH hospitals and UCHCs

The statistical data in Fig 1 shows that functionality of labour room in MCH hospitals with regard to manpower, drugs, consumables and records was in high compliance, whereas physical infrastructure and equipment and instrument was in moderate compliance. In UCHCs, the manpower was in high compliance, although equipment and instruments was in low compliance, physical infrastructure, drugs, consumables and records was in moderate compliance.

Section 5.3.1: Assessment of the level of knowledge, practice, attitude, barrier and labour outcomes on safe childbirth practices among skilled birth attendants N=160

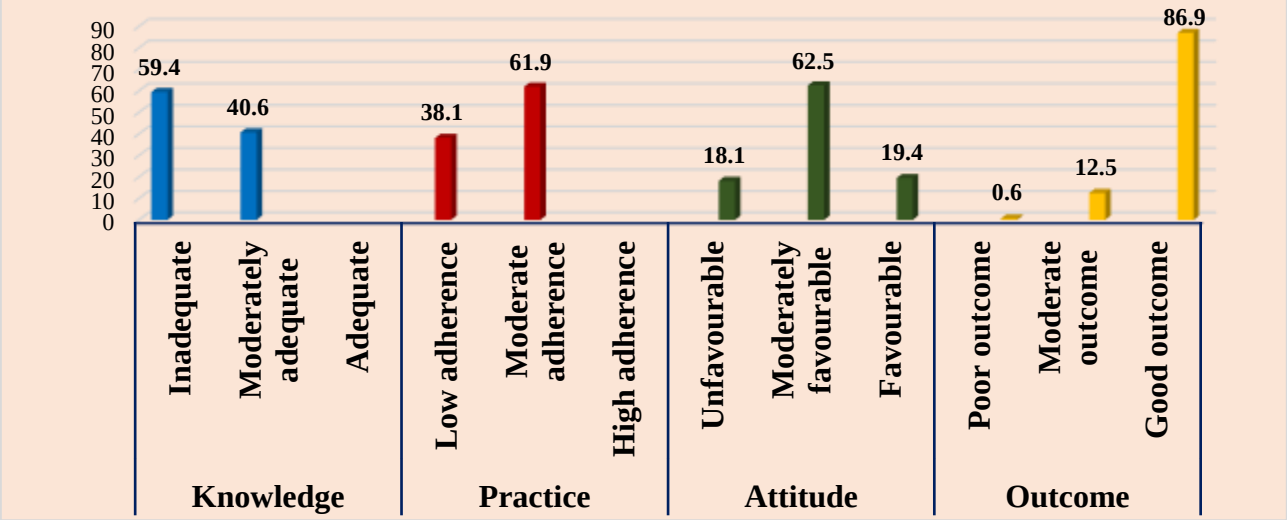


Fig 5.3.1: Percentage distribution of the level of knowledge, practice, attitude and labour outcomes on safe childbirth practices among skilled birth attendants

It can be inferred from the data in Fig 5.3.1, that the majority of skilled birth attendants had inadequate knowledge on safe childbirth practices, however moderate adherence to clinical protocols on safe childbirth practices with moderately favorable attitude. The most of the labour outcome upon their practices was good.

Table 5.3.2: Frequency and percentage distribution of greatest barriers on safe childbirth practices among Skilled birth attendants N=160

Greatest Barriers	Never		Sometimes		Always	
	n	%	n	%	n	%
Irregular supply of consumables	34	21.3	104	65.0	22	13.8
Irregular supply of drugs	33	20.6	101	63.1	26	16.3
Non-working condition of delivery instruments	42	26.3	104	65.0	14	8.8
Nursing shortage	18	11.3	89	55.6	53	33.1
Inadequate support services	25	15.6	76	47.5	59	36.9
Increased delivery load /work load	22	13.8	92	57.5	46	28.8
Increased documentation work	13	8.1	113	70.6	34	21.3
Less physical infrastructure of facility	26	16.3	88	55.0	46	28.8
Lack of training on recent updation of GoI guidelines	33	20.6	97	60.6	30	18.8
Lack of clinical mentoring or on-the-job training or supportive supervision	45	28.1	90	56.3	25	15.6
Inadequate competency on safe childbirth practices	75	46.9	78	48.8	7	4.4

The statistical information presented in the table 2 denotes, that the greatest barriers for practicing safe childbirth practices among the skilled birth attendants were irregular supplies, increased work load and capacity building challenges

Section 5.4: Comparison of knowledge, practice, attitude, barriers and labour outcomes on safe childbirth practices among skilled birth attendants in MCH hospitals & UCHCs

Table 5.4.1: Comparison of knowledge on safe childbirth practices among skilled birth attendants in MCH hospitals and UCHCs N=160

Knowledge Dimensions	MCH Hospital		UCHCs		Levene's Test
	Mean	SD	Mean	SD	
Partograph	1.85	0.96	1.09	0.83	F=5.003 P=0.027 *S
Conduction of labour	2.05	0.84	1.93	1.02	F=9.089 P=0.003 **S
Immediate care of newborn	0.88	0.73	1.06	0.83	F=0.765 P=0.383 NS
Active management of third stage of labour	2.38	1.01	2.54	0.96	F=0.162 P=0.688 NS

Fourth stage of labour	1.34	0.55	1.28	0.52	F=1.252 P=0.266 NS
High risk conditions management	1.53	0.77	1.41	0.72	F=0.746 P=0.389 NS
Management of complications	2.13	1.14	2.09	1.13	F=1.649 P=0.201 NS
Infection control practices	1.46	0.65	1.46	0.65	F=3.227 P=0.74 NS
Overall Knowledge Dimensions	13.60	2.69	12.85	3.19	F= 2.854 P= 0.93 NS

Not significant P >0.05, *significant at P≤0.05, **highly significant at P≤0.01

The above table compares the mean knowledge dimension scores between the SBAs in MCH hospitals and UCHCs. It was inferred that high level of statistical significant difference **(P≤0.01)** was observed for partograph and significant difference **(P≤0.05)** on conduction of labour. The other knowledge dimensions was not statistically significant.

Table 5.4.2: Comparison of childbirth practices among skilled birth attendants in MCH hospitals and UCHCs **N=160**

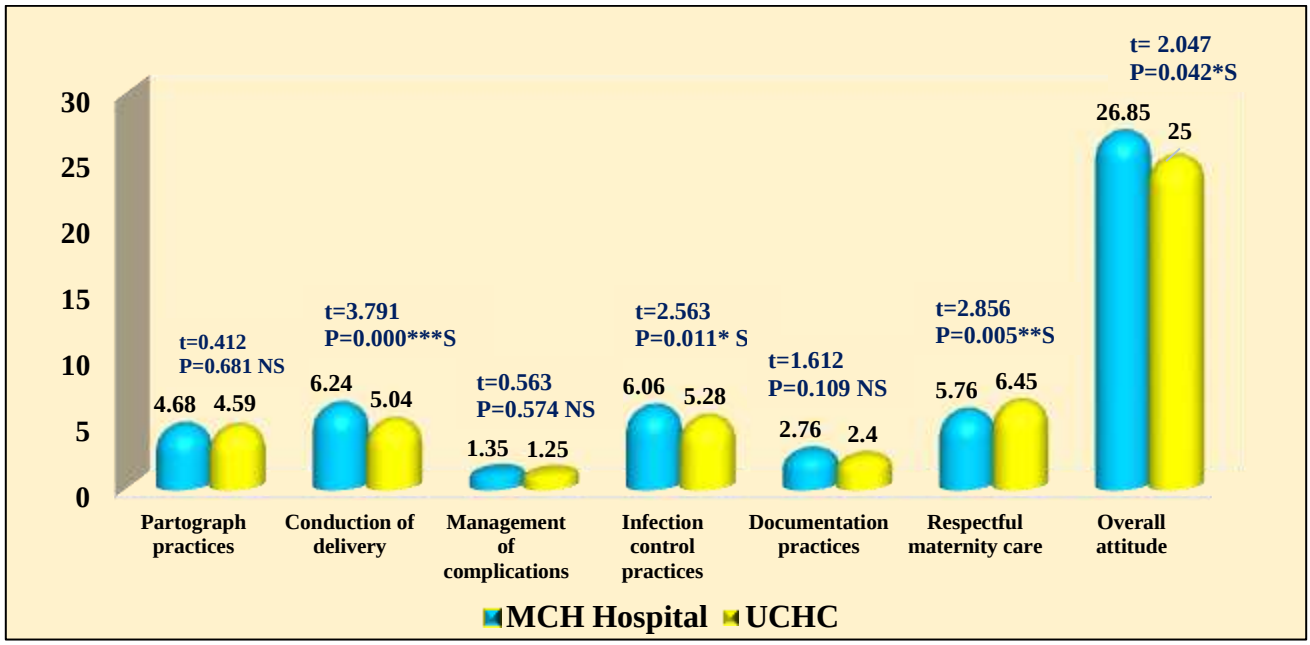
Practice Domains	**MCH Hospital**		**UCHCs**		**Mean difference**	**Independent t-test**
	Mean	**SD**	**Mean**	**SD**		
On Admission to labour room	6.95	0.61	4.61	1.06	2.34	t=16.181 P=0.000***
Active phase of labour	5.10	0.53	4.80	0.77	0.29	t=2.648 P=0.009**
Conduction of labour	9.53	0.96	4.95	2.99	4.58	t=13.042 P=0.000***
Immediate care of newborn	7.39	0.62	7.49	0.69	0.09	t=0.663 P=0.509
Active management of third stage of labour	8.62	1.34	8.35	1.76	0.27	t=1.041 P=0.300
Fourth stage of labour- Baby	4.96	0.62	4.68	0.47	0.28	t=2.076 P=0.040
Medications	4.25	0.45	4.50	0.48	0.021	t=0.267 P=0.790
Infection control practices	10.90	0.89	5.52	1.56	5.37	t=26.647 P=0.000***
Respectful maternity care	6.37	1.09	4.31	0.90	2.06	t=12.96 P=0.000***

Documentation Practices	7.00	0.85	7.06	0.83	0.05	t=0.440 P=0.660
Overall practice dimension	74.85	3.94	42.96	9.31	31.89	t=28.678 P=0.000***

Not significant P >0.05, **highly significant at P≤0.01, * very high significant at P≤0.001**

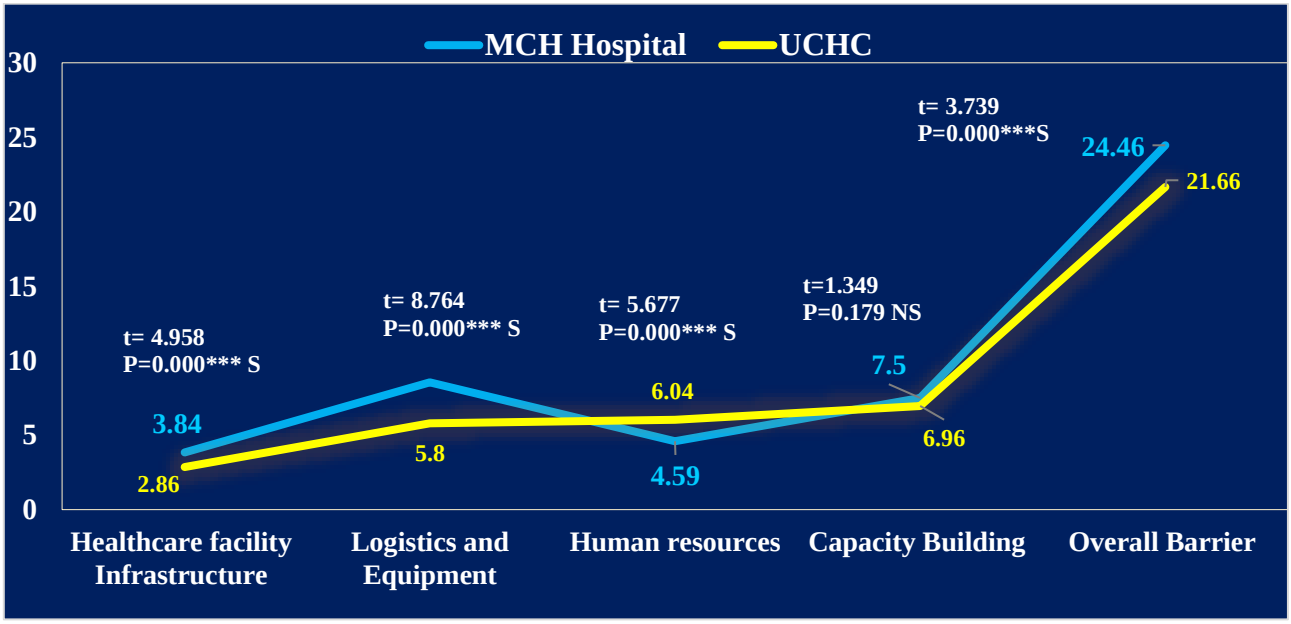
The data in the table 5.4.2 illustrates the mean practice domain scores between the SBAs in MCH hospitals and UCHCs. The mean difference was high in practices such as admission to labor room, conduction of labour, infection control practices and RMC and very high level of significant difference (**P≤0.001)** was noted.

Figure 5.4.3: Comparison of attitude on safe childbirth practices among skilled birth attendants in MCH hospitals and UCHCs N=160



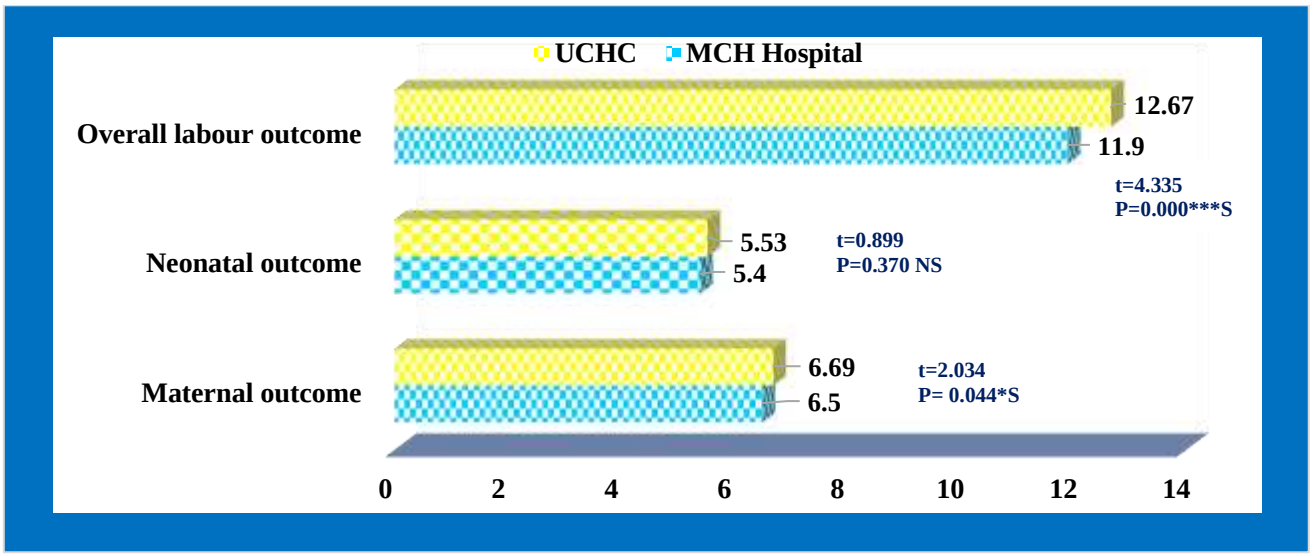
The data in Fig 5.4.3 reveals that significant difference is observed in attitude towards conduction of delivery, infection control practices and respectful maternity care among SBAs working in MCH hospitals and UCHCs.

Figure 5.4.4: Comparison of barriers for practicing safe childbirth practices among skilled birth attendants in MCH hospitals and UCHCs N=160



It was inferred from the above figure that high level of statistical significant difference **(P≤0.001)** was observed for physical infrastructure, logistics and equipment and human resources between MCH hospitals and UCHCs.

Figure 5.4.5: Comparison of labour outcome on childbirth practices among skilled birth attendants in MCH hospitals and UCHCs N=160



The figure 5.4.5, shows that high level of significant difference **(P≤0.01)** is observed in overall labour outcome, significant difference in maternal outcome **(P≤0.05)** and fetal outcome was not statistically significant.

Table 5.4.6: Comparison of practice-1, practice-2 and practice-3 mean scores and labour outcome mean scores among skilled birth attendants N=160

Variables	Practice-1		Practice-2		Practice-3		Mean square	Repeated measures ANOVA F-test (Greenhouse-Geisser)
	Mean	SD	Mean	SD	Mean	SD		
Practice	59.39	17.59	59.06	17.44	58.29	17.60	51.16	F= 10.949 P= 0.000***
Labour outcome	11.88	1.75	12.31	1.38	12.46	1.32	14.31	F=6.141 P=0.003**

The table 5.4.6 illustrates that even though slight mean difference is observed in practice-2 and practice 3, it was found to be very highly significant in the repeated measures of ANOVA. With relevance to labour outcome, high level of significance was observed.

Table 5.4.7: Multiple comparison of practice-1, practice-2 and practice-3 mean scores and labour outcome mean scores among skilled birth attendants N=160

Variabless		Childbirth practices		Labour outcome	
		Mean difference	Bonferroni test	Mean difference	Bonferroni test
Practice-1	Practice-2	0.356	P=0.423	0.513	P=0.048
	Practice-3	1.100	P=0.000	0.670	P=0.003
Practice-2	Practice-1	0.356	P=0.423	0.513	P=0.048
	Practice-3	0.744	P=0.004	0.157	P=1.000
Practice-3	Practice-1	1.100	P=0.000	0.670	P=0.003
	Practice-2	0.744	P=0.004	0.157	P=1.000

The Post hoc analysis by Bonferroni test in the above table reveals that mean difference in practice-1, practice-2 and practice-3 is significant at P≤ 0.5 in both childbirth practices and labour outcomes.

Table 5.5: Correlation of knowledge with practice, attitude and labour outcome on safe childbirth practices among skilled birth attendants N=160

Varibales	Mean	SD	Karl Pearson Correlation Coefficient	Type of correlation
Knowledge Vs Practice	13.23 58.90	2.969 17.46	r=0.176 P=0.036*	Poor+
Practice Vs Attitude	58.90 25.93	17.46 5.773	r= 0.246 P=0.002**	Fair+
Practice Vs Barriers	58.90 23.06	17.46 4.925	r= 0.414 P= 0.000***	Moderate +
Practice Vs Labour outcome	58.90 12.14	17.46 0.93	r= -0.424 P=0.000***	Moderate -
Barriers Vs Labour outcome	23.06 12.14	4.925 0.93	r= -0.214 P=0.022*	Fair-

Table 5.5 denotes that there is a positive correlation between knowledge and practice and barriers statistically and negative correlation between labour outcome and practice barriers.

Section 5.6: Association of selected demographic variables with knowledge, practice, attitude, barriers and labour outcomes on safe childbirth practices among skilled birth attendants

Table 5.6.1: Association of selected demographic variables with knowledge on safe childbirth practices among skilled birth attendants N=160

Demographic variables		Level of knowledge						Chi Square value (χ^2)
		Inadequate		Moderate Adequate		Adequate		
		n	%	n	%	n	%	
Age in years	21-30 years	44	27.5	10	6.2	-	-	$\chi^{2=}$22.851 P=0.000***
	31-40 years	34	21.2	26	16.3	-	-	
	41-50 years	10	6.2	23	14.4	-	-	
	Above 50 years	7	4.4	6	3.8	-	-	
Marital Status	Single	24	15.0	2	1.2	-	-	$\chi^{2=}$13.959 P=0.000***
	Married	71	44.4	63	39.4	-	-	
Income	Less than INR 15000	31	19.4	7	4.4	-	-	$\chi^{2=}$15.24 P= 0.004**
	INR 15000-30000	3	1.9	2	1.2	-	-	

	INR 31000-45000	5	3.1	2	1.2	-	-	
	INR 46000-60000	39	24.4	28	17.5	-	-	
	Above INR 61000	17	10.6	26	16.3	-	-	
Qualification	ANM	8	5.0	8	5.0	-	-	$\chi^{2=}$14.145 P=0.015*
	MPHW	5	3.1	15	9.4	-	-	
	GNM	59	36.9	32	20.0	-	-	
	PCBSN	2	1.2	-	-	-	-	
	BSN	17	10.7	9	5.6	-	-	
	MSN	4	2.5	1	0.6	-	-	
Designation	Staff Nurse (S/N)	83	51.9	42	26.2	-	-	$\chi^{2=}$11.691 P=0.001***
	Maternity Assistant (M/A)	12	7.5	23	14.4	-	-	
Employment	Permanent	61	38.2	56	35.0	-	-	$\chi^{2=}$9.456 P=0.002**
	Contract	34	21.2	9	5.6	-	-	
Total years of experience	Less than 1 year	10	6.2	-	-	-	-	$\chi^{2=}$15.009 P=0.002**
	1-10 years	47	29.4	25	15.6	-	-	
	11-20 years	24	15.0	17	10.6	-	-	
	21-30 years	14	14.7	23	35.4	-	-	
Experience in labour Room	Less than 1 year	16	10.0	2	1.2	-	-	$\chi^{2=}$22.458 P=0.001***
	1-5 years	48	30.0	19	11.9	-	-	
	6-10 years	20	12.5	23	14.4	-	-	
	11-15 years	3	1.9	5	3.1	-	-	
	16-20 years	3	1.9	6	3.8	-	-	
	21-25 years	-	-	1	0.6	-	-	
	26-30 years	5	3.1	9	5.6	-	-	
Training programs attended related to childbirth practices	No	50	31.2	19	11.9	-	-	$\chi^{2=}$8.616 P=0.003**
	Yes	45	28.1	46	28.8	-	-	
Number of Training attended	0 (No Training)	50	31.2	19	11.9	-	-	$\chi^{2=}$8.618 P=0.035*
	1-2 times	40	25.0	41	25.7	-	-	
	3-4 times	4	2.5	4	2.5	-	-	
	5-6 times	1	0.6	1	0.6	-	-	
SBA training	No	57	35.6	23	14.4	-	-	$\chi^{2=}$9.354 P=0.002**
	Yes	38	23.8	42	26.2			

The above table reveals that there was statistically high significant association was found between level of knowledge and almost all the demographic variables except religion and working area.

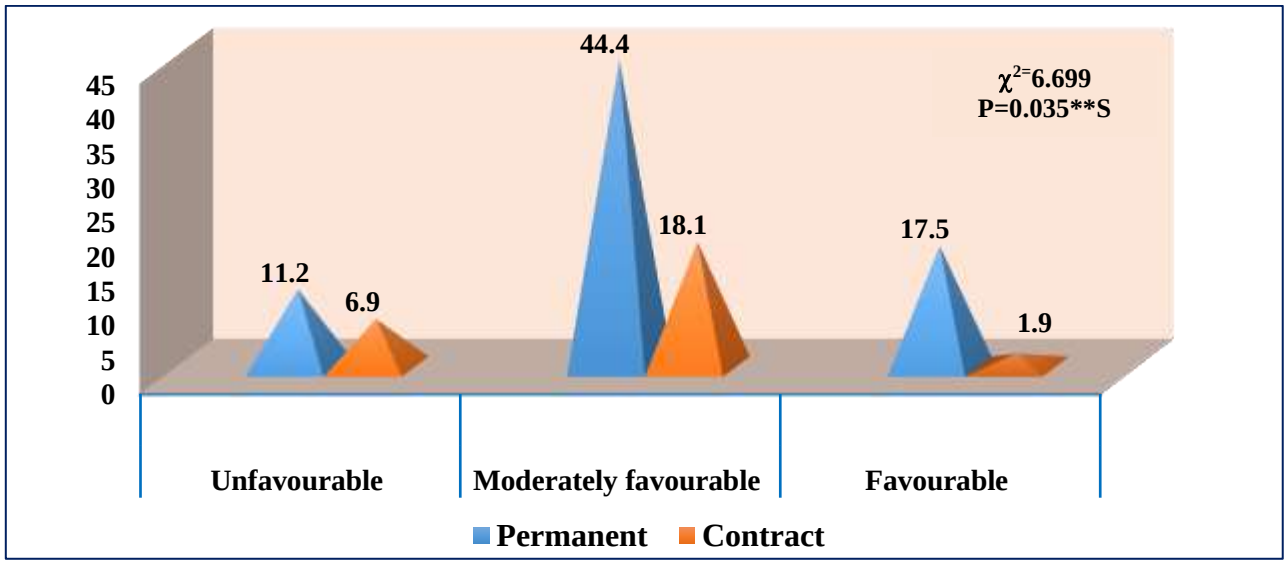
Table 5.6.2: Association of selected demographic variables with childbirth practices among skilled birth attendants N=160

Demographic variables		Level of adherence						Chi Square value (χ^2)
		Low		Moderate		High		
		n	%	n	%	n	%	
Working area	Labour Room (LR)	55	34.4	51	31.9	-	-	$\chi^{2=}$28.493 P=0.000***
	Septic Labour Room (SLR)	-	-	29	18.1	-	-	
	Newborn Care Corner (NBC)	6	3.8	19	11.8	-	-	
Age in years	21-30 years	16	10.0	38	23.8	-	-	$\chi^{2=}$ 39.190 P=0.000***
	31-40 years	11	6.9	49	30.5	-	-	
	41-50 years	22	13.8	11	6.9	-	-	
	Above 50 years	12	7.5	1	0.6	-	-	
Income	Less than INR 15000	20	12.5	18	11.2	-	-	$\chi^{2=}$52.111 P=0.000***
	INR 15000-30000			5	3.1	-	-	
	INR 31000-45000			7	4.4	-	-	
	INR 46000-60000	9	5.6	58	36.3	-	-	
	Above INR 61000	32	20.0	11	6.9	-	-	
Qualification	ANM	16	10.0-	-	-	-	-	$\chi^{2=}$78.502 P=0.000***
	MPHW	20	12.5	-	-	-	-	
	GNM	16	10.0	75	46.9	-	-	
	PCBSN	1	0.6	1	0.6	-	-	
	BSN	8	5.0	18	11.2	-	-	
	MSN	-	-	5	3.1	-	-	
Designation	Staff Nurse (S/N)	26	16.2	99	61.9	-	-	χ^2=72.708 P=0.000***
	Maternity Assistant (M/A)	35	21.9	-	-	-	-	
	Contract					-	-	
Total years of experience	Less than 1 year	4	2.5	6	3.8	-	-	$\chi^{2=}$38.665 P=0.000***
	1-10 years	17	10.6	55	34.3	-	-	
	11-20 years	10	6.2	31	19.4	-	-	
	21-30 years	30	18.8	7	4.4	-	-	
Experience in labour Room	Less than 1 year	7	4.4	11	6.9	-	-	$\chi^{2=}$40.319 P=0.000***
	1-5 years	13	8.1	54	33.7	-	-	
	6-10 years	16	10.0	27	16.9	-	-	
	11-15 years	3	1.9	5	3.1	-	-	

	16-20 years	7	4.4	2	1.2	-	-	
	21-25 years	1	0.6	-	-	-	-	
	26-30 years	14	8.8	-	-	-	-	
Year of last training attended	0 (No Training)	29	18.1	40	25.0	-	-	$\chi^{2=}$10.070 P=0.039*
	1-4 years	20	12.5	18	11.3	-	-	
	5-8 years	7	4.4	22	13.8	-	-	
	9-12 years	4	2.5	18	11.2	-	-	
	13-16 years	1	0.6	1	0.6	-	-	

The table 5.6.2 denotes that very high significant association between level of adherence to practice and demographic variables such as age, working area, income, qualification, designation, total experience, experience in labour room and year of last training attended.

Figure 5.6.3: Association of selected demographic variables with attitude on safe childbirth practices among skilled birth attendants N=160



The figure 5.6.3 represents that there was very high significant association was found between level of attitude and employment status and no significant association with other demographic variables.

Table 5.6.4: Association of selected demographic variables with barriers on safe childbirth practices among skilled birth attendants N=160

Demographic variables		Low score		High score		Chi Square value (χ^2)
		n	%	n	%	
Working facility	MCH hospital	64	40.0	16	10.0	$\chi^{2=}$10.093 P=0.001***
	UCHC	77	48.1	3	1.9	
Qualification	ANM	16	10.0	-	-	$\chi^{2=}$11.176 P=0.048*
	MPHW	19	11.9	1	0.6	
	GNM	74	46.3	17	10.6	
	PCBSN	2	1.2	-	-	
	BSN	26	16.3	-	-	
	MSN	4	2.5	1	0.6	
Income	Less than INR 15000	38	23.8	-	-	$\chi^{2=}$14.083 P=0.007**
	INR 15000-30000	3	1.9	2	1.2	
	INR 31000-45000	5	3.1	2	1.2	
	INR 46000-60000	55	34.4	12	7.5	
	Above INR 61000	40	25.0	3	1.9	

The data in table 5.6.4 depicts that high significant association was observed between barriers and income and qualification, very high significant association with working facility.

Table 5.6.5: Association of selected demographic variables with labour outcomes on safe childbirth practices among skilled birth attendants N=160

Demographic variables		Level of labour outcome						Chi Square value (χ^2)
		Poor outcome		Moderate outcome		Good outcome		
		n	%	n	%	n	%	
Working area	Labour Room (LR)			5	3.1	101	63.1	**$\chi^{2=}$41.087 P=0.000*** **
	Septic Labour Room (SLR)			3	1.9	26	16.3	
	Newborn Care Corner (NBC)	1	0.6	12	7.5	12	7.5	
Age in years	21-30 years	1	0.6	13	8.1	40	25.0	**$\chi^{2=}$12.94** P=0.044*
	31-40 years	-	-	4	2.5	56	35.0	
	41-50 years	-	-	3	1.9	30	18.8	
	Above 50 years	-	-	-	-	13	8.1	

Marital Status	Single	-	-	7	4.4	19	11.9	$\chi^{2=}$ **6.041** P=0.049*
	Married	1	0.6	13	8.1	120	75.0	
Qualification	ANM	-	-	-	-	16	10.0	$\chi^{2=}$**19.74** P=0.032*
	MPHW	-	-	-	-	20	12.5	
	GNM	-	-	12	7.5	79	49.5	
	PCBSN	-	-	-	-	2	1.2	
	BSN	1	0.6	8	5.0	17	10.6	
	MSN	-	-	-	-	5	3.1	
Designation	Staff Nurse (S/N)	1	0.6	20	12.5	104	65.0	$\chi^{2=}$**6.768** P=0.034*
	Maternity Assistant (M/A)	-	-	-	-	35	21.9	
Employment	Permanent	-	-	10	6.2	107	70.0	$\chi^{2=}$**9.213** P=0.010**
	Contract	1	0.6	10	6.2	32	20.0	
Total years of experience	Less than 1 year	-	-	5	3.1	5	3.1	$\chi^{2=}$**19.123** P=0.004**
	1-10 years	1	0.6	11	6.9	60	37.5	
	11-20 years	-	-	1	0.6	40	25.0	
	21-30 years	-	-	3	1.9	34	21.2	

The presented data in table 5.6.5 illustrates that statistically significant association was found between level of labour outcome and demographic variables such as age, working area, marital status, qualification, designation, employment and total experience.

CHAPTER 6- SUMMARY AND OUTCOME OF THE STUDY

The following were findings of the study

- The majority of the skilled birth attendants in MCH hospitals were between the age group of 31-40 years, whereas in UCHCs between the age group of 21- 30 years.
- The total nursing experience of SBA's in MCH hospitals were 1-10 years, however in UCHCs were 21-30 years, in both the settings the highest number of SBA's have 1-5 years of labour room experience only.
- It was also further noted that only 67.5% and 53.8% of SBAs have attended training programs related to childbirth practices in MCH hospitals and UCHCs respectively
- That functionality of labour room in MCH hospitals with regard to manpower, drugs, consumables and records was in high compliance, whereas physical infrastructure and

equipment and instrument was in moderate compliance. In UCHCs, the manpower was in high compliance, although equipment and instruments was in low compliance, physical infrastructure, drugs, consumables and records was in moderate compliance.

- The majority of skilled birth attendants have inadequate knowledge on safe childbirth practices, however moderate adherence to clinical protocols on safe childbirth practices with moderately favorable attitude. The most of the labour outcome upon their practices was good.
- The skilled birth attendants knowledge mean score on safe child practices was found to be very low (M=13.23) with SD (2.96) for the maximum score of 30.
- The overall practice mean score on adherence to clinical protocols on safe child birth practices was very low (M=58.90 & SD=17.46), whereas the mean score was found to be higher on practice domains with respect to admission to labour room practice, immediate care of newborn, documentation practices and management of complications. The other practice domains mean score was very low.
- The overall attitude mean scores on safe child practices among skilled birth attendants was noted to be average (M=25.93, SD=5.77), while the attitude towards respectful maternity care and partograph practices mean score was found to be high.
- The mean score of labour outcome (M=12.14, SD=0.93) was distinguished to be high among skilled birth attendants
- The barrier mean score for practicing safe childbirth practices among SBAs was noted to be low with regard to logistics and equipment, human resources and capacity building.
- There is a significant difference in mean scores of knowledge, practice, attitude, barriers and labour outcomes on safe childbirth practices in MCH hospitals and UCHCs at $p \leq 0.001$, $p \leq 0.01$ and $p \leq 0.5$ respectively
- There is a significant correlation between knowledge, practice, attitude, barriers and labour outcomes at $p \leq 0.001$, $p \leq 0.01$ and $p \leq 0.5$ correspondingly

- There is a significant association between knowledge, practice, attitude, barriers and labour outcomes with their selected demographic variables at $p \leq 0.001$, $p \leq 0.01$ and $p \leq 0.5$ respectively

CONCLUSION

The present study conclude that, the investigator had identified the gaps in knowledge, practice and attitude on safe childbirth practices among SBAs. There is a need of updation of clinical protocols, skill based training, clinical mentoring and supportive supervision for skilled birth attendants working in public healthcare facilities, which will eventually reduce the preventable maternal and neonatal mortality and deaths. The app based learning module developed by the investigator for the SBAs will aid them to optimize the knowledge and also enhance their adherence to clinical protocols on safe child birth practices.

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